



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/726,772

12/03/2003

David D. Nolte

12258-0021

4208

25267 7590 07/27/2010  
BOSE MCKINNEY & EVANS LLP  
111 MONUMENT CIRCLE, SUITE 2700  
INDIANAPOLIS, IN 46204

EXAMINER

JARRETT, LORE RAMILLANO

ART UNIT

PAPER NUMBER

1797

NOTIFICATION DATE

DELIVERY MODE

07/27/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATENT@BOSELAW.COM  
mbartol@boselaw.com  
bgibbs@boselaw.com

|                              |                                      |                                     |  |
|------------------------------|--------------------------------------|-------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/726,772 | <b>Applicant(s)</b><br>NOLTE ET AL. |  |
|                              | <b>Examiner</b><br>LORE JARRETT      | <b>Art Unit</b><br>1797             |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 3/16/10.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 12, 17, 18, 45 and 59-67 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12, 17-18, 45, and 59-67 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/3/03 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                     |                                                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____                                                         | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/16/10 has been entered.

### ***Response to Amendment***

#### ***Status of Claims***

2. Applicant's reply filed on 3/16/10 is acknowledged. Claims 1-11, 13-16, 19-44, and 46-58 were cancelled. Claims 12, 17-18, 45, and 59-67 are pending and are under examination.

#### ***Claim Interpretation***

3. See prior Office action, filed on 2/6/09.

### ***Response to Amendment***

#### ***Claim Rejections - 35 USC § 112***

4. The rejection of claim 18 under 35 U.S.C. 112, second paragraph, is withdrawn.
5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Art Unit: 1797

6. Claims 12, 17-18, 45, and 59-67 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In particular, the newly amended claim language, "time modulated signal beam," in claims 12, 18, and 61, appear to be subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention because paragraph i.e., [0114] of the published application recites that the wavefront of the signal beam 430 has a "periodic phase modulation" over time due to the spinning of the CD and repetitive spacing of targets and blanks. For this reason, the Office would recommend amending the claim language regarding the signal beam to "periodic phase modulated signal beam." For examination purposes, the Office will interpret that applicant intended the newly amended claim language to recite a, "periodic phase modulated signal beam."

7. Claims 12, 17-18, 45, and 59-67 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. The "substrate" is a critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). In the present claims, the "substrate" feature is not positively recited in the claim because it is in the preamble. It appears to be an essential feature of the claim because it is the structural feature that comprises the analyte to be detected. Furthermore,

Art Unit: 1797

applicant appears to further define features which would require the substrate. The Office recommends positively claiming the “substrate” by including in the body of the claims 12 and 61.

***Prior art rejections***

8. In light of applicant’s amendments, the rejections over the prior art are withdrawn. New rejections follow.

***Claim Rejections - 35 USC § 103***

9. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

10. **Claims 12, 17, 18, 45, and 59-65** are rejected under 35 U.S.C. 103(a) as being unpatentable over Gustafson et al. (“Gustafson,” US 5413939, newly cited and cited in IDS) in view of Virtanen (US 6312901, previously cited).

As to claims 12, 18, 45, 59, 61, 64, 65, Gustafson discloses, in figs. 1A-11H, a device including:

an optical source (i.e. 21) for generating a source beam (i.e. col. 6, lines 10-63; Gustafson's optical source is capable of performing the function recited after “for,” because “for” is an intended use term);

a beam splitter (i.e. 5) for splitting the source beam into a probe beam and a reference beam (i.e. col. 6, lines 10-63; Gustafson's beam splitter is capable of performing the function recited after “for,” because “for” is an intended use term);

a signal path along which the probe beam travels (i.e. while Gustafson discloses a signal path, this limitation is considered a statement of intended use because it does

Art Unit: 1797

not appear to further limit the structure of the claimed device; see fig. 1A and col. 6, lines 10-63);

a reference path along which the reference beam travels, the reference path being at least partially different from the signal path (i.e. while Gustafson discloses a reference path, this limitation is considered a statement of intended use because it does not appear to further limit the structure of the claimed device; see fig. 1A and col. 6, lines 10-63);

an adaptive optical element (i.e. 5) on both the signal path and the reference path for combining a first portion of the time modulated signal beam and a first portion of the reference beam to form a first output beam which travels along the signal path, and for combining a second portion of the time modulated signal beam and a second portion of the reference beam to form a second output beam which travels along the reference path (i.e. "for" is an intended use term; see col. 6, lines 12-63);

a reference path detector (i.e. 13 or 14, col. 6, line 12 to col. 8, line 2) on the reference path for responding to the second output beam for generating a reference path signal (i.e. "for" is an intended use term);

a signal path detector (i.e. 13 or 14, col. 6, lines 12-63) on the signal path responsive to the first output beam to generate a signal path signal (i.e. Gustafson's detector is capable of performing the function recited after "responsive to" because such language is intended use language); and

Art Unit: 1797

a motor for spinning the substrate (i.e. Gustafson discloses that his disc spins and further discloses in col. 13, lines 25-54 a motor shaft, thus it would be inherent that a motor spins his disc in fig. 1A).

As to claims 12, 17, and 61, while Gustafson discloses another embodiment that involves a interferometer that is used like a compact disc reading head and scans the surface of the substrate to make its readings (i.e. col. 18, lines 35-53), Gustafson does not specifically disclose a scanner in the embodiments of figures 1A-11H.

Virtanen discloses an assay device comprising a solid support substrate to which a plurality of cleavable signal elements is attached in a spatially addressable pattern. In some embodiments of the assay device, the solid support may preferably be a plastic, and in these embodiments, is most preferably polycarbonate. The solid support in some embodiments is fashioned as a disk, preferably in dimensions compatible with detection by existing laser reflection-based detectors, such as an audio compact disk (CD) reader, a compact disk-read only memory (CD-ROM) reader, a digital video disk (DVD) reader, or the like (i.e. "scanner," col. 5, line 54 to col. 6, line 8).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify Gustafson's device by including a scanner because Gustafson conceives an interferometer that is used like a compact disc reading head that scans the surface of a substrate to make readings. Furthermore, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify Gustafson's device because it would be desirable to have an economical system to fabricate spatially addressable probe arrays in a simplified format that provides both for ready

Art Unit: 1797

detection and the ability to assay for large numbers of test substances (i.e. analytes) in a fluid test sample in a single step, or a minimum number of steps, or assay for a single test substance or analyte in a large number of fluid test samples (i.e. Virtanen, col. 2, lines 59-66).

As to claims 12 and 59-61, while Gustafson discloses a processing system that performs the functions recited in claims 12 and 59-61 with regard to figure 9 (i.e. col. 13, line 25 to col. 14, line 22), Gustafson does not specifically disclose a processing that performs these functions with regard to figure 1A.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify Gustafson's embodiment of figure 1A, by including the processing system of figure 9, because Gustafson recognizes having such feature and the advantages, which include the ability to safely store all the signal measurements and reference measurements, and to perform the calculations digitally (i.e. Gustafson, col. 13, line 55 to col. 14, line 22).

As to claim 63, this claim is considered statement of intended use because it is unclear how this claim further limits the structure of the claimed device.

11. **Claims 66-67** are rejected under 35 U.S.C. 103(a) as being unpatentable over Gustafson in view of Virtanen, as to claims 12, 17, 18, 45, and 59-65, and further in view of Drevillon et al. ("Drevillon," US 5485271, previously cited).

See Gustafson and Virtanen *supra*.



While the modified Gustafson discloses that an electro-optic element could be interposed in the path of one of the beams, Gustafson does not specifically disclose an electro-optical modulator and a polarizer.

Drevillon discloses an infrared ellipsometer for taking a measurement of a sample. It comprises an exciter group 3, a sample support 5, an analysis group 7 and electronic means 9. (2) This ellipsometer is an infrared ellipsometer working in a wavelength range extending from approximately 2 micrometers up to approximately 11 micrometers. The exciter group 3 comprises a Globar type source 101, a Michelson interferometer 103, a polarizer 105, and an optical means 107 for aligning source 101 with sample 1. The ellipsometer comprises a phase modulator 8, preferably photoelastic, in Zn.Se., which modulates the transmitted luminous flux at a frequency w. Phase modulator 8 is preferably in exciter group 3. It can, however, be in the receiver group, without noticeably modifying the optical signal form received by photodetector 703. Electronic means 9 receives, in addition to the electric signal supplied by photodetector 703, a first reference corresponding to the modulator termed high-frequency reference, and various signals originating from Michelson interferometer 103. These signals, which are lower in frequency than those provided by the modulator, indicate the moments at which spectrum scanning starts and stops, the direction of this scanning comprising a low-frequency reference signal supplied by the reference laser of the Michelson interferometer 103. (i.e. col. 3, line 54 to col. 4, line 50; see also patented claim 1).

Art Unit: 1797

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the modified Gustafson by incorporating an electro-optical modulator on the reference path, as disclosed by Drevillon, because Gustafson discloses that an electro-optic element could be interposed in the path of one of the beams. Furthermore, it would have been obvious to a person of ordinary skill in the art to modify the modified Gustafson because it would be desirable to provide a reference signal modulated at a different frequency to easily differentiate it from the other signals (i.e. Drevillon, col. 4, lines 31-41). Furthermore, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the modified Gustafson by incorporating a polarizer on both the signal path and the reference path because it would be desirable to control the characteristics of light that enter the sample and reference cell.

### ***Response to Arguments***

12. Applicant's arguments with respect to claims 12, 17-18, 45, and 59-67 have been considered but are moot in view of the new ground(s) of rejection.

### ***Double Patenting***

13. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct

Art Unit: 1797

from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

14. Claims 12 and 61 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 7-9 of U.S. Patent No. 7,405,831 in view of Gustafson. Patent No. 7,405,831 does not specifically claim a microprocessor. See Gustafson *supra*. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate a processing system in Patent No. 7,405, because it would be desirable to safely store all the signal

Art Unit: 1797

measurements and reference measurements, and to perform the calculations digitally (i.e. Gustafson, col. 13, line 55 to col. 14, line 22).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LORE JARRETT whose telephone number is (571)272-7420. The examiner can normally be reached on Mon. to Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/LORE JARRETT/  
Primary Examiner, Art Unit 1797

7/22/10